

Herniation of distal jejunum into the partially everted urinary bladder of a cow

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Eversion of the urinary bladder through the urethra has been reported in dairy cows (1-4). Eversion of the urinary bladder may occur during parturition (5), or early within the puerperium (1). In one case, eversion of the bladder was accompanied by uterine torsion (4). Eversion of the urinary bladder must be differentiated on physical examination from prolapse of the urinary bladder, vaginal prolapse, vaginal or vulvar tumors, a mass of fat protruding through a rupture in the floor of the vagina, or vaginal or vulvar hematomas (5,6). Herniation of the intestine may occur into the everted urinary bladder, posing a serious threat to the life of the dam, but this event is rare (4). We document herein a case of the distal jejunum herniated into a partially everted urinary bladder.

A five-year-old, 600 kg, Holstein cow was referred to the Veterinary Medical Teaching Hospital of the University of Wisconsin-Madison for correction of dystocia and a protruding mass from her vagina. The cow had had two normal calvings; the present calving was three weeks past the due date. Physical examination revealed a normal rectal temperature (38.2°C), pulse rate of 104 beats/minute, and respiratory rate of 40 breaths/minute. She had been straining since the previous day. She appeared bright and alert and was in stable condition.

Examination of the protruding mass revealed the structure to be about 16 cm diameter; it appeared fluid-filled and was hyperemic (Figure 1). Vaginal examination confirmed that the mass was protruding through the urethral opening and was thought to be the everted urinary bladder, and also revealed a dead calf in posterior presentation, dorsopubic in position with extended limbs. The ureteral orifices were not visible on the surface of the bladder. There was no evidence of a vaginal tear. The cow was placed in sternal recumbency with hindlegs extended caudally for effective repositioning of the everted urinary bladder.

A high epidural block was performed with 30 mL of 2% lidocaine hydrochloride (Vedco Inc., Overland Park, Kansas), and reduction of the everted urinary bladder was attempted. When this was not possible, reduction of the everted bladder was attempted, first by needle puncture and then by passing a urinary catheter into the urethra. Needle puncture was made on the ventral surface of the everted bladder. Catheterization was performed by lifting the everted bladder and passing the catheter on the ventral side beneath the mass. One hundred milliliters of fluid were retrieved via the needle puncture and 50 mL via urinary catheter. The fluid from the needle puncture of the

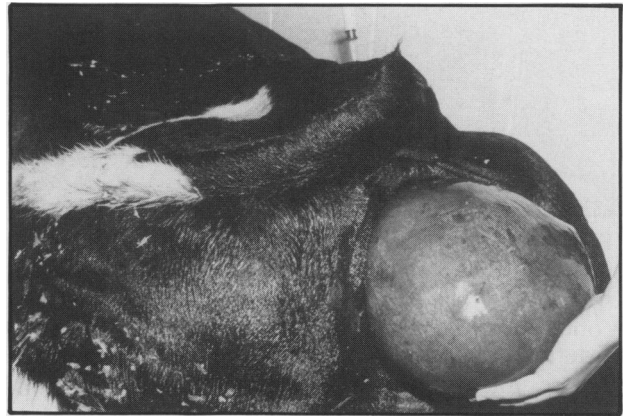


Figure 1. Urinary bladder everted through the urethra of a cow with dystocia.

mass was serosanguineous whereas the fluid from the urinary catheter was normal urine. Reduction of the urinary bladder was not possible.

At this time, we decided to remove the calf. The calf was corrected from a dorsopubic to a dorsosacral position and the calf was then delivered manually. Since the bladder was still not reducible, the bladder was incised to hopefully decrease its size in order that it could be returned to its normal abdominal position. When the everted bladder was incised, it was found to contain about 2 m of prolapsed devitalized jejunum (Figure 2).

Considering the nonviable nature of the everted urinary bladder and prolapsed small intestine, the cow was euthanized. At necropsy, approximately 2 m of the distal jejunum were found to be present within the everted urinary bladder. The entrapped mesentery of the intestine had large areas of hemorrhage.

It is important to differentiate prolapse from eversion of the urinary bladder since the type of reduction procedure depends on this knowledge. In bladder eversion, the mucosal surface of the bladder protrudes through the vulvar lips, whereas in bladder prolapse, the serosal surface is seen. Absence of a tear in the vagina, as observed in our case, is suggestive of eversion rather than prolapse of the urinary bladder. Needle aspiration is another technique used to identify whether the mass is prolapsed or everted bladder. Failure to obtain urine through needle aspiration, as in the present case, will confirm eversion of the urinary bladder. However, there is disagreement among authors as to whether or not an everted urinary bladder can contain urine. In an earlier report, urine was supposedly aspirated from an everted urinary bladder (1), but it is suggested by other authors (2) that fluid obtained by needle aspiration from an everted urinary bladder could be serosal effusate, as it was in the present case. It is possible that the serosal effusate in our case could have resulted from acute inflammation of the herniated intestine. The fact that urine was

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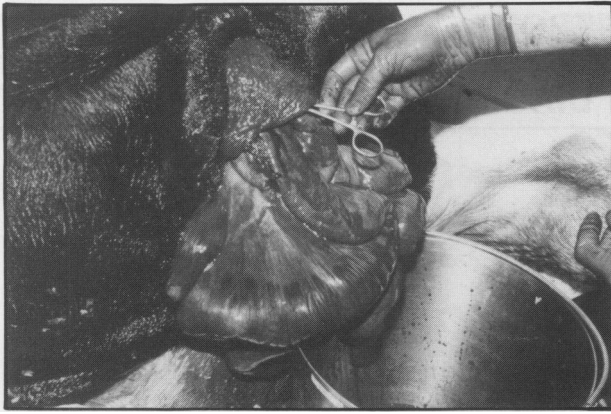


Figure 2. Two meters of devitalized jejunum herniated through the urethra into everted bladder.

obtained by a catheter in our case confirms the partial eversion of the urinary bladder.

Unlike the situation in mares, reduction of the urinary bladder may be a problem in the cow because of the narrow urethra and subsequent vascular impairment which can lead to earlier necrosis of the organ (2). Straining is usually present, and is presumed to be the precipitating cause for herniation of the intestine into the everted urinary bladder (4). Although the diagnosis was made promptly in the present case, reduction was not possible from a vaginal approach. Correction of the everted urinary bladder was not attempted via a flank laparotomy due to the guarded prognosis for survival, nonviable intestine and bladder, and the economic constraints for the owner.

If prolapse of the intestine into the bladder was suspected earlier, then the calf might have been delivered by caesarean section and an attempt made, via the abdomen, to retract the intestine and bladder. This would avoid the risk of traumatizing the bladder, urethra, and entrapped intestine during delivery of the calf through the vagina (7). It might also eliminate the need to incise the bladder. Incision of the dorsal aspect of the urethra, as described by Ducharme and Stem (2), might still be necessary in order to successfully reposition the intestine and bladder. In retrospect, this approach might not be economically justified in this case since nonviable portions of intestine and bladder would still require surgical removal.

References

1. Hentschl AF, Walton JF. Repair of an everted bladder in a cow. *Vet Med Small Anim Clin* 1966; 61: 253.
2. Ducharme NG, Stem ES III. Eversion of the urinary bladder in the cow. *J Am Vet Med Assoc* 1981; 179: 996-998.
3. Jones G. Bladder eversion in dairy cows. *Mod Vet Pract* 1984; 65: 950.
4. Frazer GS. Uterine torsion followed by jejunal incarceration in a partially everted urinary bladder of a cow. *Aust Vet J* 1988; 65: 24-25.
5. Brunsdon JR. A case of urinary bladder prolapse in the cow. *Vet Rec* 1961; 73: 437-438.
6. Teige AV. Fodselsbeskdigelser av vesica urinaria hos ku nord. *Nord Vet Med* 1956; 8: 658-664.
7. Roberts SJ. *Veterinary Obstetrics and Genital Diseases*. 2nd ed. Ann Arbor, Michigan: Edwards Brothers Inc., 1971: 307-309.